

Search history:

No.	Database	Search term	Info added since	Results	
СР		[Clipboard]		0	-
1	INZZ	YEAR=2007	unrestricted	38821	show titles
2	INZZ	YEAR=2006	unrestricted	420652	show titles
3	INZZ	valve ADJ current AND electromagnetic ADJ valve AND pulse	unrestricted	0	•
4	INZZ	valve WITH current AND electromagnetic WITH valve AND pulse	unrestricted	4	show titles

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Information added since: or (YYYYMMDD)	none	
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Inspec thesaurus - browse headings	•	
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Classification codes A: Physics, 0-1		
Classification codes A: Physics, 2-3		
Classification codes A: Physics, 4-5		
Classification codes A: Physics, 6		

search

- Classification codes A: Physics, 7
- Classification codes A: Physics, 8
- Classification codes A: Physics, 9
- Classification codes B: Electrical & Electronics, 0-5
- Classification codes B: Electrical & Electronics, 6-9
- Classification codes C: Computer & Control
- Classification codes D: Information Technology
- Classification codes E: Mech., Manufac. & Production Engineering
- Treatment codes
- Inspec sub-file
- Language of publication
- Publication types

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# **Titles**

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Documents 1 to 4 of 4 from your search "valve WITH current AND electromagnetic WITH valve AND pulse" in all the available information:

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Select All

1 display full document
2006. (INZZ) Line mass-density measurements of gas puff Z-pinch load using high sensitive laser interferometer.

2 display full document
1999. (INZZ) Pulse electromagnetic light valve based on adaptive fuzzy control.

3 display full document
1981. (INZZ) Springless fast opening electromagnetic valve.

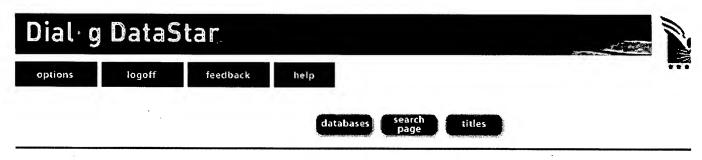
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1976. (INZZ) Controlling electromagnetic compressor valve.

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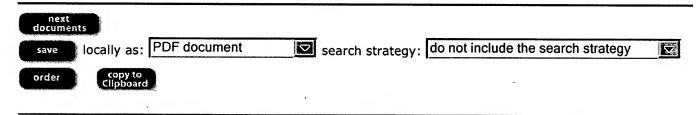
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✓ document 1 of 4 Order Document

Inspec - 1898 to date (INZZ)

## Accession number & update

0009100815 20070101.

### Title

Line mass-density measurements of gas puff Z-pinch load using high sensitive laser interferometer.

### **Source**

High Power Laser and Particle Beams, {High-Power-Laser-Part-Beams-China}, June 2006, vol. 18, no. 6, p. 1049-52, 19 refs, CODEN: QYLIEL, ISSN: 1001-4322.

Publisher: Nucl. Soc. China, China.

#### Author(s)

He-An, Yang-Xiang-dong, Deng-Jian-jun, Li-Ye-xun, Li-Feng-ping, Jiang-Wei, Chen-Lin, Zou-Jie.

#### **Author affiliation**

He An, Yang Xiang-dong, Inst. of Atomic & Molecular Phys., Sichuan Univ., Chengdu, China.

#### **Abstract**

The high sensitive laser interferometer of checking minuteness phase shift 0.2° was built using the way of heterodyne and phase track. The line mass-density of gas puff Z-pinch load was measured. The interruption of machine vibration to interference-signal was eliminated by putting the interferometer into the vacuum chamber and setting the laser and vacuum chamber and optic elements on the full gas optical platform. The curve of average line mass-density of Ar gas load varying with time was obtained. It can be used to optimize the Lavale nozzle design. The forming time of gas fluid stationary state is helpful for adjusting the synchronization between the opening time of **electromagnetic valve** and the drive **current** from **pulse** power facilities in Z-pinch experiment.

## **Descriptors**

ARGON; LIGHT-INTERFEROMETERS; MEASUREMENT-BY-LASER-BEAM; NOZZLES;

PLASMA-DENSITY; PLASMA-DIAGNOSTICS; PULSED-POWER-SUPPLIES; Z-PINCH.

#### Classification codes

A5270K Optical-ultraviolet-visible-infrared-plasma-diagnostic-techniques\*;

A4262E Metrological-applications-of-lasers;

<u>A5255E</u> <u>Pinch-effect-and-pinch-machines</u>;

A5225L Plasma-temperature-and-density;

A0760L Optical-interferometry;

B4360E Metrological-applications-of-lasers\*;

#### B8360 Power-convertors-and-power-supplies-to-apparatus.

### Keywords

line-mass-density-measurements; gas-puff-Z-pinch-load; high-sensitive-laser-interferometer; machine-vibration; interference-signal; vacuum-chamber; Ar-gas-load; Lavale-nozzle-design; gas-fluid-stationary-state; synchronization; **electromagnetic-valve**; **drive-current**; **pulse-** power-facility; Ar.

#### **Treatment codes**

P Practical;

X Experimental.

#### Chemical indexing

<u>Ar-el</u>.

Language

Chinese.

#### **Publication type**

Journal-paper.

#### **Availability**

SICI: 1001-4322(200606)18:6L.1049:LMDM; 1-S.

#### **Publication year**

2006.

#### **Publication date**

20060600.

#### **Edition**

2006040.

## Copyright statement

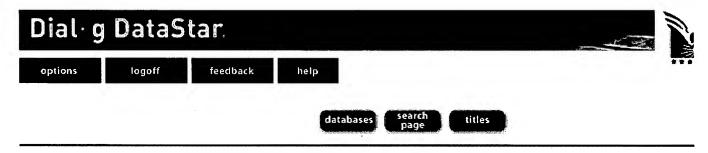
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document 2 of 4 Order Document

Inspec - 1898 to date (INZZ)

### Accession number & update

0006630452 20070101.

#### **Title**

Pulse electromagnetic light valve based on adaptive fuzzy control.

#### **Source**

Journal of Applied Sciences, {J-Appl-Sci-China}, Dec. 1999, vol. 17, no. 4, p. 463-8, 5 refs, CODEN: YKXUD4, ISSN: 0255-8297.

Publisher: Editorial Committee of J. Applied Sciences, China.

## Author(s)

Hu-Hanping, Wu-Xiaogang, Mu-Chenpeng, Li-Dehua, Wang-Zuxi, Zhou-Yan.

### **Author affiliation**

Hu Hanping, Wu Xiaogang, Mu Chenpeng, Li Dehua, Wang Zuxi, Zhou Yan, Inst. of PR&AI, Open Lab. of Image Inf. Process. Intelligent Control, Wuhan, China.

#### Abstract

This paper introduces an adaptive high-speed **pulse electromagnetic** light **valve**. Because of some uncertainty of **electromagnetic** light valves, in order to raise the frequency of the **valve** in certain basic structure by adjusting the parameters of drive **current**, we observed the status of the **valve** in various controllable parameters through experiments. Then, these data are used to design adaptive fuzzy control system by means of genetic algorithms. The advantages of the **valve** are no influence on the character of the light path, simple structure, long life, high frequency and relatively large switch calibre, etc. The **valve** is applied successfully in 3D laser scanning equipment.

## **Descriptors**

ADAPTIVE-CONTROL; FUZZY-CONTROL; GENETIC-ALGORITHMS; HIGH-SPEED-OPTICAL-TECHNIQUES; DIGHT-VALVES; OPTICAL-CONTROL; OPTICAL-SCANNERS.

#### Classification codes

B4150D Liquid-crystal-devices\*;

B0260 Optimisation-techniques;

<u>B0170S</u> <u>Control-equipment-and-processes-in-production-engineering</u>;

C3380P Control-of-optical-systems\*;

C1340E Self-adjusting-control-systems;

C1340F Fuzzy-control;

C1180 Optimisation-techniques;

E0210G Optimisation\*;

E1550 Control-technology-and-theory;

E3644N Optoelectronics-manufacturing.

#### Keywords

adaptive-fuzzy-control; **high-speed-pulse-electromagnetic-light-valve**; genetic-algorithm; 3D-laser-scanner.

#### **Treatment codes**

T Theoretical-or-mathematical.

#### Language

Chinese.

## **Publication type**

Journal-paper.

## Availability

SICI: 0255-8297(199912)17:4L.463:PELV; 1-F.

## **Publication year**

1999.

#### **Publication date**

19991200.

#### **Edition**

2000026.

#### **Copyright statement**

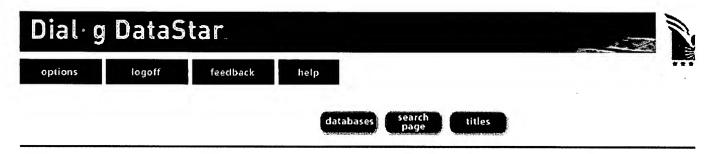
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document 3 of 4 Order Document

Inspec - 1898 to date (INZZ)

## Accession number & update

0001664367 20070101.

Title

Springless fast opening electromagnetic valve.

#### Source

Indian Journal of Pure and Applied Physics, {Indian-J-Pure-Appl-Phys-India}, Jan. 1981, vol. 19, no. 1, p. 56-60, 12 refs, CODEN: IJOPAU, ISSN: 0019-5596, India.

### Author(s)

Venkataramani-N, Mattoo-S-K.

### **Author affiliation**

Venkataramani, N., Mattoo, S.K., Phys. Res. Lab., Ahmedabad, India.

#### Abstract

A springless fast **electromagnetic valve** is described. The performance of the **valve** is determined in terms of the parameters of the neutral gas cloud it admits into a system maintained at a base pressure of 10 /sup -5/ torr. The **valve** opens for about 500 musec and admits ~10/sup 19/.10/sup 20/ gas molecules in one shot of its operation. Whereas theoretical considerations suggest that a **current** of about 300 A is sufficient to open the **valve**, experience has shown that the practical requirement is ~3 kA. This order of magnitude discrepancy is attributed to various frictional forces which could not be taken into account in the theoretical treatment. The calculated time profile of the gas cloud is found to be in agreement with the neutral gas **pulse** width determined by a reflex discharge probe.

## **Descriptors**

PLASMA-DEVICES; VALVES.

#### **Classification codes**

A5275 Plasma-devices-and-applications\*.

## Keywords

**springless-fast-electromagnetic-valve**; neutral-gas-cloud; gas- molecules; frictional-forces; **neutral-gas-pulse**; reflex-discharge-probe.

#### **Treatment codes**

T Theoretical-or-mathematical;

X Experimental.

## Language

English.

**Publication type** 

Journal-paper.

**Publication year** 

1981.

**Publication date** 

19810100.

**Edition** 

1981005.

**Copyright statement** 

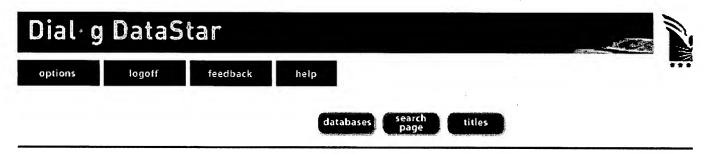
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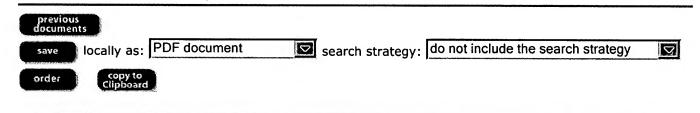
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**☑** document 4 of 4 Order Document

Inspec - 1898 to date (INZZ)

## Accession number & update

0000910701 20070101.

Title

Controlling electromagnetic compressor valve.

#### **Patent information**

Patent number: GB-1415444. Filing/submission date: 19730710. Publication date: 19760106. Country of publication: UK.

### Author(s)

Scherbakov-V-S.

#### **Abstract**

The solenoid operated **valve** has an **electromagnetic** coil and a **valve** plate movable to two positions. To set the **valve** in its first state the coil is energised by a **current pulse** long enough only to magnetise the magnetic circuit so that the plate is held to the pole piece by remanent magnetisation following termination of the **pulse**. In its second state the coil is energised by an opposite polarity **pulse** long enough for the circuit to become demagnetised so that the plate moves to its second position. The circuit can be used with a temperature sensor to control operation of a refrigeration compressor.

#### **Descriptors**

COMPRESSORS; REFRIGERATION; SOLENOIDS; VALVES.

#### **Classification codes**

<u>B5180F</u> <u>Solenoids-and-electromagnets\*</u>;

B8560 Refrigeration-and-cold-storage;

<u>C3260B</u> <u>Electric-actuators-and-final-control-equipment\*</u>;

C3340B Control-of-heat-systems.

## Keywords

**electromagnetic-compressor-valve; solenoid-operated-valve;** magnetic- circuit; remanent-magnetisation; refrigeration-compressor.

## **Treatment codes**

A Application;

P Practical.

#### Language

English.

**Publication type** 

Patent.

**Publication year** 

1976.

**Publication date** 

19760106.

**Edition** 

1976005.

**Copyright statement** 

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## Search Results -

Terms	Documents
10/773,668	1

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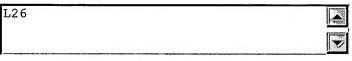
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**EPO Abstracts Database** 

JPO Abstracts Database **Derwent World Patents Index** 

**IBM Technical Disclosure Bulletins** 

Search:



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# **Search History**

DATE: Wednesday, April 11, 2007 **Purge Queries** Printable Copy Create Case

Set Name side by side	Query	<u>Hit</u> Count	Set Name result set
DB= OP=O	=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; THES=ASSIGNEE; PLUR=YES, PR	•	
<u>L26</u>	10/773,668	1	<u>L26</u>
<u>L25</u>	L24 and (solenoid\$ and heterod\$) and (cross\$ or section\$) and (valve\$ with current\$) and (pwm\$ or pulse\$)	. 0	<u>L25</u>
<u>L24</u>	120 or 121 or 123	56	<u>L24</u>
DB=	=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR		•
<u>L23</u>	(4102222   4201116   5119683   4941321   5577534   4550953   2775982   4266572   5191827   5571248   4396037   4041983   5115395   3949645   4021712   4321946   4478250   4131325   4373697   4009695   4843902   5063813   5417241   3740615   5251671   5048329   4643225   4067357   4779489   5197583   5079971)![PN]	31	<u>L23</u>
DB=	=USPT,DWPI; THES=ASSIGNEE; PLUR=YES; OP=OR		
<u>L22</u>	("5404301"  "4543875"  "6374856"  "DE 3245259A"  "EP 628742A"  "DE 29705635U")[ABPN1,NRPN,PN]	6	<u>L22</u>

DB=	=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; THES=ASSIGNEE; PLUR=YES;		
OP = O	OR		
<u>L21</u>	119	6	<u>L21</u>
DB=	=USPT,DWPI; THES=ASSIGNEE; PLUR=YES; OP=OR		
<u>L20</u>	("5404301"  "4543875"  "6374856"  "DE 3245259A"  "EP 628742A"  "DE 29705635U")[URPN]	19	<u>L20</u>
	=PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD; THES=ASSIGNEE; PLUR=YES;		
OP = C			
<u>L19</u>	4543875.pn. or 6374856.pn. or 5404301.pn.	6	<u>L19</u>
<u>L18</u>	L17 and (pwm\$ or pulse\$)	. 0	<u>L18</u>
<u>L17</u>	L16 and (valve\$ with current\$)	2	<u>L17</u>
<u>L16</u>	L13 and (cross\$ or section\$)	32	<u>L16</u>
<u>L15</u>	L13 and super\$	0	<u>L15</u>
<u>L14</u>	L13 and heterod\$	0	<u>L14</u>
<u>L13</u>	mannesmann\$ and (valve\$ with electro\$)	78	<u>L13</u>
<u>L12</u>	L9 and (valve\$ with electro\$)	. 0	<u>L12</u>
<u>L11</u>	L9 and (valve\$ with current\$)	0	L11
<u>L10</u>	L9 and (solenoid\$ and heterod\$)	0	L10
<u>L9</u>	mannesmann.inv.	40	L9
DB	=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR		
<u>L8</u>	L4 and super\$	, 1	<u>L8</u>
<u>L7</u> .	L4 and heterodyn\$	0	L7
<u>L6</u>	L4 and (heterodyn\$ and (super\$ or impos\$))	0	<u>L6</u>
<u>L5</u>	L4 and cross\$	0	<u>L5</u>
<u>L4</u>	5404301.pn.	1	<u>L4</u>
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	=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR		
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	=PGPB, USPT, EPAB, DWPI; THES=ASSIGNEE; PLUR=YES; OP=OR	-	
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## **Search Results -** Record(s) 1 through 6 of 6 returned.

☑ 1. Document ID: US 6374856 B1

L19: Entry 1 of 6

File: USPT

Apr 23, 2002

US-PAT-NO: 6374856

DOCUMENT-IDENTIFIER: US 6374856 B1

TITLE: Valve device, especially a combined proportional-distributing valve device

Full Title Citation Front Review Classification Date Reference September 1988 Placements Claims KWC Draw Da

☑ 2. Document ID: US 5404301 A

L19: Entry 2 of 6

File: USPT

Apr 4, 1995

US-PAT-NO: 5404301

DOCUMENT-IDENTIFIER: US 5404301 A

TITLE: Method and apparatus of vehicle transmission control by assured minimum

pulse width

Full Title Citation Front Review Classification Date Reference Spenishics Attachments Claims KMC Draw De

☑ 3. Document ID: US 4543875 A

L19: Entry 3 of 6

File: USPT

Oct 1, 1985

US-PAT-NO: <u>4543875</u>

DOCUMENT-IDENTIFIER: US 4543875 A

TITLE: Electro-hydraulic directional control valve

Full Title Citation Front Review Classification Date Reference Sectionates Altaphnetic Claims KMC Draw, De

4. Document ID: JP 2005114157 A, DE 29705635 U1, DE 19719557 A1, WO 9844266 A1, EP 904495 A1, JP 2000511620 W, KR 2000016262 A, US 6374856 B1, EP 904495 B1, DE 59808592 G, JP 3600936 B2

L19: Entry 4 of 6

File: DWPI

Apr 28, 2005

DERWENT-ACC-NO: 1998-429113

DERWENT-WEEK: 200529

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TITLE: Combined proportioning and selector valve - generates actuating force over part of working range to give proportioning effect



5. Document ID: CN 1053624 C, EP 628742 A1, AU 9463342 A, BR 9401772 A, CZ 9401368 A3, CA 2125133 A, US 5404301 A, ZA 9403867 A, JP 07151225 A, AU 668037 B, EP 628742 B1, DE 69400844 E, ES 2094026 T3, CN 1103839 A, RU 2123440 C1, CA 2125133 C, CZ 287765 B6, KR 300295 B

L19: Entry 5 of 6

File: DWPI

Jun 21, 2000

DERWENT-ACC-NO: 1995-015775

DERWENT-WEEK: 200468

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TITLE: Vehicle transmission control by minimum pulse width - supplies solenoid valves with fluid incrementally to operate clutch or brake actuators optimised with feedback



## 6. Document ID: DE 3245259 A, DE 3245259 C, US 4543875 A

· L19: Entry 6 of 6

File: DWPI

Jun 7, 1984

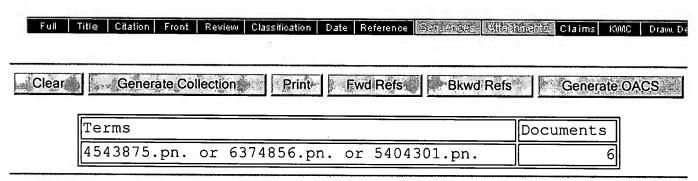
DERWENT-ACC-NO: 1984-147176

DERWENT-WEEK: 198424

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TITLE: Simplified electrohydraulic valve - has main control slide of main valve

controlling pressure path to and from load



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Interrupt

# **Refine Search**

## Search Results -

Terms	Documents
L3 and (vehicle or car or automobile)	8

US Pre-Grant Publication Full-Text Database
US Patents Full-Text Database
US OCR Full-Text Database
EPO Abstracts Database
JPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Recall Text

Search:

Database:

L6		 _	Define Seconds
	•	<b>~</b>	Refine Search

Clear

## Search History

DATE: Wednesday, April 11, 2007 Purge Queries Printable Copy Create Case

Set Name side by side	Query	<u>Hit</u> <u>Count</u>	Set Name result set
DB=E	PAB,JPAB,DWPI,TDBD; THES=ASSIGNEE; PLUR=YES; OP=OR		
<u>L6</u>	L3 and (vehicle or car or automobile)	- 8	<u>L6</u>
<u>L5</u>	L3 and (heterod\$ or pwm\$)	1	<u>L5</u>
<u>L4</u>	L3 and (clock\$ with frequenc\$)	0	<u>L4</u>
<u>L3</u>	(electromagnetic\$ with valve) and (valve with current) and pulse and frequenc\$	43	<u>L3</u>
<u>L2</u>	(electromagnetic\$ with valve) and (valve adj current) and pulse and frequenc\$	0	<u>L2</u>
<u>L1</u>	(electromagnetic\$ adj valve) and (valve adj current) and pulse and frequenc\$	0	<u>L1</u>

**END OF SEARCH HISTORY** 

Previous Doc

Next Doc

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**End of Result Set** 

Generate Collection Print

L5: Entry 1 of 1

File: JPAB

Sep 18, 2002

PUB-NO: JP02002267039A

DOCUMENT-IDENTIFIER: JP 2002267039 A

TITLE: SOLENOID VALVE

PUBN-DATE: September 18, 2002

INVENTOR-INFORMATION:

NAME

COUNTRY

OGAWARA, ICHIRO

ASSIGNEE-INFORMATION:

NAME

COUNTRY

SAGINOMIYA SEISAKUSHO INC

APPL-NO: JP2001063506 APPL-DATE: March 7, 2001

INT-CL (IPC): F16K 31/06; F04B 27/14; F04B 49/06

ABSTRACT:

PROBLEM TO BE SOLVED: To avoid generation of hysteresis by operating a  $\underline{\text{valve}}$  element in an oscillating manner even when the  $\underline{\text{PWM frequency}}$  is high and the amplitude of the coil current is small.

SOLUTION: In a solenoid <u>valve</u> in which a bellows device 21 is expanded/ contracted according to the differential pressure between the intake pressure Ps and the internal pressure of the bellows, the position of the <u>valve</u> element 17 is determined according to the balance between the load on the <u>valve</u> element 17, the magnetic attraction force generated by an <u>electromagnetic</u> coil device 51 to be energization-controlled by the modulation of the <u>pulse</u> width, and the spring force of a <u>valve</u> spring 20 by the expansion/contraction of the bellows device 21, and the <u>valve</u> opening is increased/decreased according to the <u>valve</u> position, the natural <u>frequency</u> of a spring-mass system is set according to the <u>pulse</u> width modulation <u>frequency</u> so that the spring-mass system including the <u>valve</u> element 17 and the <u>valve</u> spring 20 generates resonance under energization-control by the modulation of the <u>pulse</u> width of the <u>electromagnetic</u> coil device 51.

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Search Results - Record(s) 1 through 8 of 8 returned.

☐ 1. Document ID: JP 02034474 A

L6: Entry 1 of 8

File: JPAB

Feb 5, 1990

PUB-NO: JP402034474A

DOCUMENT-IDENTIFIER: JP 02034474 A TITLE: STEERING FORCE CONTROL DEVICE

Full Title Citation Front Review Classification Date Reference Reference Attackined Claims KVMC Draw. De

☐ 2. Document ID: DE 10332489 A1

L6: Entry 2 of 8

File: EPAB

Feb 24, 2005

PUB-NO: DE010332489A1

DOCUMENT-IDENTIFIER: DE 10332489 A1

TITLE: Response method for <u>electromagnetic</u> adjustment device e.g. of motor <u>vehicle</u> combustion engine gas-exchange <u>valve</u>, requires driving electromagnet by sequence of

current pulses at current pulse frequency of initial pulse of sequence

Full Title Citation Front Review Classification Date Reference Sequences Affecting to Claims KWC Draw De

☐ 3. Document ID: EP 75657 A2

L6: Entry 3 of 8

File: EPAB

Apr 6, 1983

PUB-NO: EP000075657A2

DOCUMENT-IDENTIFIER: EP 75657 A2

TITLE: Control device for <u>electromagnetic valves</u>.

Full Title Citation Front Review Classification Date Reference **Sequences Attachments** Claims KMC Draw, De

☐ 4. Document ID: DE 1004027217 A1

L6: Entry 4 of 8

File: DWPI

Dec 29, 2005

DERWENT-ACC-NO: 2006-081169

DERWENT-WEEK: 200609

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TITLE: Hydraulic servo drive system operating method for <u>automobile</u>, involves varying <u>pulse</u>-width modulated voltage fundamental frequency independent of phase

Record List Display Page 2 of 3

time variations by random number so that varied  $\underline{\text{frequency}}$  is within  $\underline{\text{frequency}}$  spectrum

Full Title Citation Front Review Classification Date Reference **Sequences Attachments** Claims KMC Draw. Do

5. Document ID: DE 10332489 A1

L6: Entry 5 of 8

File: DWPI

Feb 24, 2005

DERWENT-ACC-NO: 2005-184429

DERWENT-WEEK: 200520

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TITLE: Response method for <u>electromagnetic</u> adjustment device e.g. of motor <u>vehicle</u> combustion engine gas-exchange <u>valve</u>, requires driving electromagnet by sequence of <u>current pulses</u> at <u>current pulse</u> frequency of initial <u>pulse</u> of sequence

Full | Title | Citation | Front | Review | Classification | Date | Reference | Syllicities | Attackments | Claims | KVMC | Draw. De

☐ 6. Document ID: US 6170506 B1

L6: Entry 6 of 8

File: DWPI

Jan 9, 2001

DERWENT-ACC-NO: 2001-158317

DERWENT-WEEK: 200116

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TITLE: Solenoid operated regulator  $\underline{\text{valve}}$  cleaning involves controlling  $\underline{\text{pulse}}$  width and amplitude of  $\underline{\text{current pulse}}$  to be supplied to  $\underline{\text{valve}}$  actuator during calibration, based on degree of contamination of  $\underline{\text{valve}}$  environment

Full Title Citation Front Review Classification Date Reference **Sequences Attachments** Claims KWIC Draw De

☐ 7. Document ID: WO 9519282 A1, JP 09507661 W, US 5458406 A, EP 735961 A1

L6: Entry 7 of 8

File: DWPI

Jul 20, 1995

DERWENT-ACC-NO: 1995-263779

DERWENT-WEEK: 199741

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TITLE: Electronic relief  $\underline{\text{valve}}$  for motor  $\underline{\text{vehicle}}$  brake traction slip control - uses electronic control of isolation  $\underline{\text{valve}}$  coupled to brake conduit to supply preselected energising  $\underline{\text{current}}$  corresp. to desired pressure

Full Title Citation Front Review Classification Date Reference **Sequences Attactments** Claims KMC Draw Do

8. Document ID: FR 2484106 A, DE 3172501 G, EP 44263 A, EP 44263 B

L6: Entry 8 of 8

File: DWPI

Dec 11, 1981

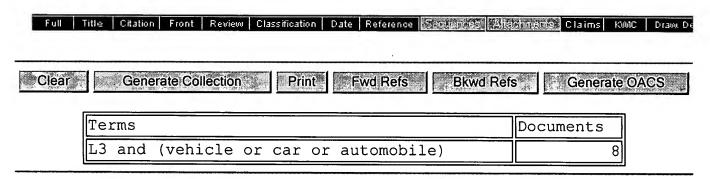
Record List Display Page 3 of 3

DERWENT-ACC-NO: 1982-A5597E

DERWENT-WEEK: 198203

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TITLE: <u>Current</u> to flow converter for hydraulic jacking system - provides rapid response by alternate switching of two <u>electromagnetic valves</u> with high rate duty cycles



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L6: Entry 1 of 8

File: JPAB

Feb 5, 1990

PUB-NO: JP402034474A

DOCUMENT-IDENTIFIER: JP 02034474 A TITLE: STEERING FORCE CONTROL DEVICE

PUBN-DATE: February 5, 1990

INVENTOR-INFORMATION:

NAME

COUNTRY

ETO, KUNIHIKO MORI, YUTAKA

MATSUMOTO, TSUTOMU TAKAHASHI, YOSHIO

ASSIGNEE-INFORMATION:

NAME

COUNTRY

TOYODA MACH WORKS LTD

APPL-NO: JP63185754

APPL-DATE: July 26, 1988

US-CL-CURRENT: <u>257/184</u> INT-CL (IPC): B62D 6/02

## ABSTRACT:

PURPOSE: To make it possible to obtain a favorable response to a handle operation during running at high speed by employing a range in which the control <u>current</u> amount of an <u>electromagnetic valve</u> changes in response to the steering <u>frequency</u> as a function of <u>car</u> speed in the case of an <u>electromagnetic</u> control <u>valve</u> for restricting assist force increased by a power cylinder.

CONSTITUTION: A power steering device 10 transmits steering torque applied with assist force increased by a power cylinder 12 to a steering wheel. The above-mentioned assist force is restricted in response to the opening of an electromagnetic control valve 20 controlled by a steering force control circuit 40 based on signals from a steering angle sensor 30 and a car speed sensor 35. In this instance, the steering force control circuit 40 consists of a switching circuit 42 converting voltage signals from a conversion circuit 47 outputting voltage signals proportional to car speed into pulse signals according to pulse signals from the steering angle sensor 30, an integration circuit 45 smoothening the pulse signals, and an addition circuit 40 adding output signals from the integration circuit 45 and the conversion circuit 47.

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L6: Entry 2 of 8

File: EPAB

Feb 24, 2005

PUB-NO: DE010332489A1

DOCUMENT-IDENTIFIER: DE 10332489 A1

TITLE: Response method for <u>electromagnetic</u> adjustment device e.g. of motor <u>vehicle</u> combustion engine gas-exchange <u>valve</u>, requires driving electromagnet by sequence of <u>current pulses</u> at current pulse frequency of initial pulse of sequence

PUBN-DATE: February 24, 2005

INVENTOR-INFORMATION:

NAME COUNTRY
BAUMBACH, JENS DE
BEYER, FRANK DE
ELSAESER, ALFRED DE
OTTO, RAINER DE
SCHILLING, WOLFGANG DE
SCHMIDT, JAN DE

ASSIGNEE-INFORMATION:

NAME

MAHLE FILTERSYSTEME GMBH DE

APPL-NO: DE10332489

APPL-DATE: July 16, 2003

PRIORITY-DATA: DE10332489A (July 16, 2003)

INT-CL (IPC): H01F 7/18

#### ABSTRACT:

A method for exciting an adjustment device with at least an electromagnet and an armature which can be adjusted from an output position (A) against a spring restoring/resetting force in one direction in a first end-position (Ei) in which it rests against an armature counter-piece of the electromagnet. The electromagnet is driven by a predetermined sequence of several current <u>pulses</u> (13). A <u>pulse frequency</u> of the current <u>pulses</u> is reduced to the starting <u>frequency</u> assigned to the first current <u>pulse</u> (13) of the sequence. The starting <u>frequency</u> is made greater than a natural <u>frequency</u> of an oscillatory system containing the armature and spring restoring/resetting force.

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L6: Entry 3 of 8

File: EPAB

Apr 6, 1983

PUB-NO: EP000075657A2

DOCUMENT-IDENTIFIER: EP 75657 A2

TITLE: Control device for <u>electromagnetic valves</u>.

PUBN-DATE: April 6, 1983

INVENTOR-INFORMATION:

NAME

COUNTRY

LEHMANN, ULRICH

ASSIGNEE-INFORMATION:

NAME

COUNTRY

DE

PORSCHE AG

APPL-NO: EP82105799

APPL-DATE: June 30, 1982

PRIORITY-DATA: DE03138647A (September 29, 1981)

INT-CL (IPC): B60T 13/68

EUR-CL (EPC): B60T013/66; B60T008/50, B60T008/50

### **ABSTRACT:**

CHG DATE=19990617 STATUS=0>1. A control apparatus for solenoid <u>valves</u>, in particular for pressure regulators of hydraulic <u>vehicle</u> braking units, which can be actuated with <u>current pulses</u> of controllable <u>pulse</u> width and constant <u>pulse</u> <u>frequency</u> and can be continuously varied, the <u>pulse frequency</u> being higher than the limit <u>frequency</u> resulting from the mass and readjusting spring constant of the solenoid <u>valves</u> (6, 7), characterized in that the <u>pulse frequency</u> amounts to between two and ten times the limit <u>frequency</u>.

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L6: Entry 4 of 8

File: DWPI

Dec 29, 2005

DERWENT-ACC-NO: 2006-081169

DERWENT-WEEK: 200609

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TITLE: Hydraulic servo drive system operating method for <u>automobile</u>, involves varying <u>pulse</u>-width modulated voltage fundamental <u>frequency</u> independent of phase time variations by random number so that varied <u>frequency</u> is within <u>frequency</u> spectrum

INVENTOR: BEGEROW, S; KIRCHNER, W

PATENT-ASSIGNEE: ZF LENKSYSTEME GMBH (ZAHF)

PRIORITY-DATA: 2004DE-A027217 (June 3, 2004)

Search Selected Search ALL Clear

PATENT-FAMILY:

PUB-NO

PUB-DATE

LANGUAGE

PAGES MAIN-IPC

DE 1004027217 A1

December 29, 2005

011 B62D005/09

APPLICATION-DATA:

PUB-NO

APPL-DATE

APPL-NO

DESCRIPTOR

DE1004027217A1

June 3, 2004

2004DE-A027217

INT-CL (IPC): B62D 5/09

ABSTRACTED-PUB-NO: DE1004027217A

BASIC-ABSTRACT:

NOVELTY - The method involves varying a high and low phase times (28, 29) of a phase cycle of a <u>pulse</u> width modulated voltage by a random number. The fundamental <u>frequency</u> of the voltage is varied independent of the phase times variations by another random number such that the varied <u>frequency</u> lies within a given <u>frequency</u> spectrum. Magnetic coil <u>current of an electromagnetic valve</u> is controlled by a semiconductor switch based on the voltage.

DETAILED DESCRIPTION - The random numbers are generated according to the probability density function (26) of a micro-controller of a servo driver system.

USE - Used for operating a hydraulic servo drive system of an automobile.

ADVANTAGE - The fundamental <u>frequency of the pulse</u> width modulated voltage is varied by the random number independent of the high-phase time and low-phase time variations such that the varied <u>frequency</u> lies within the given <u>frequency</u> spectrum, minimizing the interferences and improving the electromagnetic compatibility.

DESCRIPTION OF DRAWING(S) - The drawing shows a schematic representation of a procedure for the variation of a high-phase time and a low-phase time and spreading of the  $\underline{\text{frequency}}$  spectrum.

Fundamental <a href="frequency of pulse">frequency of pulse</a>-width modulated voltage f0

Probability density function 26

High phase time 28

Low phase time 29

Frequency generator 35

ABSTRACTED-PUB-NO: DE1004027217A

**EQUIVALENT-ABSTRACTS:** 

CHOSEN-DRAWING: Dwg.6/8

DERWENT-CLASS: Q18 X22

EPI-CODES: Q18-B06C; X22-C02;

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L6: Entry 5 of 8

File: DWPI

Feb 24, 2005

DERWENT-ACC-NO: 2005-184429

DERWENT-WEEK: 200520

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TITLE: Response method for <u>electromagnetic</u> adjustment device e.g. of motor <u>vehicle</u> combustion engine gas-exchange <u>valve</u>, requires driving electromagnet by sequence of <u>current pulses</u> at <u>current pulses</u> frequency of initial pulse of sequence

INVENTOR: BAUMBACH, J; BEYER, F; ELSAESSER, A; OTTO, R; SCHILLING, W; SCHMIDT, J

PATENT-ASSIGNEE: MAHLE FILTERSYSTEME GMBH (MAHLN)

PRIORITY-DATA: 2003DE-1032489 (July 16, 2003)

Search Selected Search ALL Clear

PATENT-FAMILY:

PUB-NO

PUB-DATE

LANGUAGE

PAGES

MAIN-IPC

DE 10332489 A1

February 24, 2005

011 ·

H01F007/18

APPLICATION-DATA:

PUB-NO

APPL-DATE

APPL-NO

DESCRIPTOR

DE 10332489A1

July 16, 2003

2003DE-1032489

INT-CL (IPC): H01F 7/18

ABSTRACTED-PUB-NO: DE 10332489A

BASIC-ABSTRACT:

NOVELTY - The method for exciting an adjustment device with at least an electromagnet and an armature which can be adjusted from an output position (A) against a spring restoring/resetting force in one direction in a first end-position (Ei) in which it rests against an armature counter-piece of the electromagnet. The electromagnet is driven by a predetermined sequence of several current <u>pulses</u> (13). A <u>pulse frequency</u> of the current <u>pulses</u> is reduced to the starting <u>frequency</u> assigned to the first current <u>pulse</u> (13) of the sequence. The starting <u>frequency</u> is made greater than a natural <u>frequency</u> of an oscillatory system containing the armature and spring restoring/resetting force.

USE - For actuating a gas-exchange valve in a combustion engine e.g. of a motor  $\underline{\text{vehicle}}$ .

ADVANTAGE - Functions properly with a comparatively large bandwidth of natural <a href="frequencies">frequencies</a>.

DESCRIPTION OF DRAWING(S) - The diagram with corresponding excitation procedure shows a sequence of current <u>pulses</u> with the resulting armature movement over time.

Current <u>pulses</u> 13

Output position A

First end position Ei

ABSTRACTED-PUB-NO: DE 10332489A

EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.2/3

DERWENT-CLASS: V02 X22

EPI-CODES: V02-E02A; X22-A03G;

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Generate Collection

Print

L6: Entry 6 of 8

File: DWPI

Jan 9, 2001

DERWENT-ACC-NO: 2001-158317

DERWENT-WEEK: 200116

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TITLE: Solenoid operated regulator  $\underline{\text{valve}}$  cleaning involves controlling  $\underline{\text{pulse}}$  width and amplitude of  $\underline{\text{current pulse}}$  to be supplied to  $\underline{\text{valve}}$  actuator during calibration, based on degree of contamination of  $\underline{\text{valve}}$  environment

INVENTOR: BUTWIN, J; CICALA, S M ; HAASE, R C ; MONAGHAN, M J ; PROTOPAPAS, M E ; WICKLER, W

PATENT-ASSIGNEE: FORD GLOBAL TECHNOLOGIES INC (FORD)

PRIORITY-DATA: 1999US-0246519 (February 8, 1999)

Search Selected Search ALL Clear

PATENT-FAMILY:

PUB-NO

PUB-DATE

LANGUAGE

PAGES

MAIN-IPC

US 6170506 B1

January 9, 2001

011

F16K031/02

APPLICATION-DATA:

PUB-NO

APPL-DATE

APPL-NO

DESCRIPTOR

US 6170506B1

February 8, 1999

1999US-0246519

INT-CL (IPC): F16K 31/02; H01F 7/18

ABSTRACTED-PUB-NO: US 6170506B

BASIC-ABSTRACT:

NOVELTY - Pulse width and pulse amplitude of current pulse supplied to electromagnetic actuator for valve are controlled to effect instantaneous response of valve. The pulse width and amplitude are determined during calibration from transfer function results that indicate robust performance in presence of expected level of contamination of valve environment.

DETAILED DESCRIPTION - The <u>current pulses</u>, when the electrohydraulic <u>valve</u> is calibrated, provides precise mechanical movement without excessive pressure change in controlled element such as transmission clutch or brake. An INDEPENDENT CLAIM is also included for cleaning cycle driver circuit for solenoid operated regulator valve in hydraulic control valve system.

USE - For cleaning solenoid operated regulator valve for purging oil borne contaminants from the valve in hydraulic control valve system for automatic transmission control in automotive <u>vehicle</u> drive line. Also in other environment such as flow divider in power steering circuit or in other pressure regulated valve systems in non-automotive <u>vehicle</u> control valve systems.

ADVANTAGE - The effect of hysteresis and inaccuracies due to contamination can further be reduced by utilizing dither <u>frequency</u> on applied current. The driver circuit is flexible for purposes of calibration and is programmable for various solenoid valve system by determining <u>pulse</u> width, <u>pulse</u> amplitude corresponding to the particular solenoid design.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic representation of cleaning cycle driver circuit.

ABSTRACTED-PUB-NO: US 6170506B

**EQUIVALENT-ABSTRACTS:** 

CHOSEN-DRAWING: Dwg.11/11

DERWENT-CLASS: Q66 V02 X22 X25

EPI-CODES: V02-E02A1; X22-G01; X25-L01A;

First Hit Previous Doc Next Doc Go to Doc#

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File: DWPI

Jul 20, 1995

DERWENT-ACC-NO: 1995-263779

DERWENT-WEEK: 199741

L6: Entry 7 of 8

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TITLE: Electronic relief  $\underline{\text{valve}}$  for motor  $\underline{\text{vehicle}}$  brake traction slip control - uses

electronic control of isolation valve coupled to brake conduit to supply

preselected energising current corresp. to desired pressure

INVENTOR: HALL, T J

PATENT-ASSIGNEE: ITT IND INC (INTT), ITT CORP (INTT)

PRIORITY-DATA: 1994US-0181928 (January 14, 1994)

		Search Selected Sea	irch ALL C	Clear				
PATENT-FAMILY:								
	PUB-NO .	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC			
	WO 9519282 A1	July 20, 1995	E	019	B60T008/48			
	JP 09507661 W	August 5, 1997		018	B60T008/34			
	US 5458406 A	October 17, 1995		007	B60T008/32			
	EP 735961 A1	October 9, 1996	E	001	B60T008/48			

DESIGNATED-STATES: JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE DE FR GB IT

CITED-DOCUMENTS: DE 4002865; WO 9308055

#### APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
WO 9519282A1	January 17, 1995	1995WO-US00490	
JP 09507661W	January 17, 1995	1995JP-0519140	
JP 09507661W	January 17, 1995	1995WO-US00490	•
JP 09507661W		WO 9519282 .	Based on
US 5458406A	January 14, 1994	1994US-0181928	
EP 735961A1	January 17, 1995	1995EP-0908500	
EP 735961A1	January 17, 1995	1995WO-US00490	
EP 735961A1		WO 9519282	Based on

INT-CL (IPC): B60T 8/32; B60T 8/34; B60T 8/36; B60T 8/48

ABSTRACTED-PUB-NO: US 5458406A

BASIC-ABSTRACT:

The system includes a master cylinder (12) which is operated by the <u>vehicle</u> operator's brake pedal (16) and facilitates supply of hydraulic fluid to the brake system from a reservoir (14).

The <u>electromagnetically</u> actuated isolation <u>valve</u> (32), coupled to the brake system (10), is electronically controlled by supplying a preselected level of energising <u>current</u> which corresponds with a holding pressure approximately equal to the max. desired level of pressure during the traction slip control manoeuvre.

USE/ADVANTAGE - Enables control of <u>electromagnetically</u> operated relief <u>valve in</u> <u>vehicle</u> brake system by selectively energising solenoid so as to control max. pressure obtained during traction slip control manoeuvre.

ABSTRACTED-PUB-NO: WO 9519282A EQUIVALENT-ABSTRACTS:

#### I claim:

- 1. A system for relieving undesirable pressure from within a <u>vehicle</u> brake system, comprising:
- a reservoir for holding hydraulic fluid;
- a conduit connecting said reservoir to a wheel brake for communicating hydraulic fluid from said reservoir to said wheel brake;
- an <u>electromagnetically</u> actuated isolation  $\underline{\text{valve}}$  connected to said conduit, said isolation  $\underline{\text{valve}}$  having a first  $\underline{\text{valve}}$  position for isolating said wheel brake from said reservoir, said isolation  $\underline{\text{valve}}$  having a holding pressure associated with said first  $\underline{\text{valve}}$  position, said holding pressure being proportional to an actuating signal supplied to said isolation  $\underline{\text{valve}}$ ,  $\underline{\text{said valve}}$  opening from said first  $\underline{\text{valve}}$  position in response to a pressure within said system that exceeds said holding pressure;
- a pump for generating braking pressure within said conduit to cause said hydraulic fluid to bear against said wheel brake when said isolation valve is in said first valve position, said pump being hydraulically connected to said conduit between said isolation valve and said wheel brake; and

means for supplying an actuating signal to said isolation valve such that said valve opens from said first valve position to allow hydraulic fluid to exit said conduit into said reservoir to thereby relieve undesirable pressure from within said conduit during a traction control manoeuvre,

wherein said holding pressure is proportional to a current amplitude of said actuating signal,

wherein said signal supplying means produces said actuating signal having a preselected current amplitude such that said holding pressure is maintained at a preselected level,

wherein said signal supplying means comprises a microprocessor electronically coupled with said system,

wherein said actuating signal is produced by said microprocessor, said signal comprising a series of <u>pulses</u> having a preselected <u>pulse</u> amplitude, <u>pulse</u> width and

frequency such that said actuating signal has an average. current amplitude.

CHOSEN-DRAWING: Dwg.1A/3 Dwg.1/3

DERWENT-CLASS: Q18 T01 X22 EPI-CODES: T01-J07C; X22-C01A;

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L6: Entry 8 of 8

File: DWPI

Dec 11, 1981

DERWENT-ACC-NO: 1982-A5597E

DERWENT-WEEK: 198203

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TITLE: <u>Current</u> to flow converter for hydraulic jacking system - provides rapid response by alternate switching of two <u>electromagnetic valves</u> with high rate duty

cycles

INVENTOR: GUETTMANN, P

PATENT-ASSIGNEE: GUETTMANN P (GUETI)

PRIORITY-DATA: 1980FR-0013347 (June 10, 1980)

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PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES MAIN-IPC
FR 2484106 A	December 11, 1981		012
DE 3172501 G	November 7, 1985	•	000
EP 44263 A	January 20, 1982	F	000
EP 44263 B	October 2, 1985	F	000

DESIGNATED-STATES: AT BE CH DE GB IT LI LU NL SE AT BE CH DE GB IT LI LU NL SE

CITED-DOCUMENTS: US 3279323; US 3295421 ; US 3521535 ; US 3659631 ; US 3740588 ; US 4015426

APPLICATION-DATA:

PUB-NO

APPL-DATE

APPL-NO

DESCRIPTOR

EP 44263A

June 9, 1981

1981EP-0440017

INT-CL (IPC): F15B 9/03; F15B 13/04; F16H 5/40; G05D 3/18; G05D 7/06

ABSTRACTED-PUB-NO: EP 44263B

BASIC-ABSTRACT:

The appts. has a rapid response and is used in a distribution network for a fluid used in an automatic gearbox or load mover on a road haulage  $\underline{\text{vehicle}}$ . A fluid flow from a reservoir passes through two electrovalves (1,2) with a high switching rate controlled from electronic control units (3,4). By switching the values with a controlled duty cycle at the high rate,  $\underline{\text{pulses}}$  are avoided at a jack system (6) used to manoeuvre loads.

A position sensor (7) connected to the jack is connected to a comparator (8) which compares the actual position with a demand unit (9) signal. A threshold detector (11) compares the error signal with a sawtooth generator (10) output to drive one electrovalve controller (3) directly and the other (4) through a phase shift circuit (12). This ensures operation of the valves at the required rate.

ABSTRACTED-PUB-NO: FR 2484106A EQUIVALENT-ABSTRACTS:

Rapid response <u>current</u>-flow converter for dosing a fluid flow and particularly a gaseous flow to a receiving means (6), particularly a load handling means such as a jack, or a distribution device; said converter comprising several electro-valves (1, 2) each controlled by an electronic control means (3, 4) and connected by their inlet to a pressurised fluid reservoir (5) and by their outlet to receiving means (6); and by a sensor means (7) measuring a parameter which is proportional to the flow, particularly a position sensor mechanically connected to the handling device (6) or a flow meter; the output of the sensor means (7) is connected to one input of a comparator (8), whose other input is connected to a desired or reference signal supplying member (9) said comparator (8) supplying a voltage which is a direct function of the difference between the desired value and the real value; said converter also having a saw tooth generator (10) connected to a threshold detector (11) connected to the output of the comparator (8) and which compares the signal form the saw tooth generator (10) with that from the comparator (8) and supplies a cyclical ration square wave signal, characterised in that the electrovalves (1, 2) have a fast switching frequency of approximately 100 Hz, that a phase shifting circuit (12) is provided for each electro-valve (2), excepting the first electro-valve, the inputs of these first electronic control means of the first electro-valve (1) and the phase shifting circuits (12) being connected to the output of the threshold detector (11) by a common connection point (C) and that the electronic control means (3, 4) allocated to the electro-valves (1, 2) have, at the electro-valve cut-off supply, a shift equal to n representing the number of electro-valves used. (9pp)

CHOSEN-DRAWING: Dwg.1

DERWENT-CLASS: Q57 Q64 T06 X22 EPI-CODES: T06-B04B; X22-X;

## Hit List

First Hit Clear Generate Collection Print Fwd Refs Bkwd Refs Generate OACS

**Search Results** - Record(s) 1 through 4 of 4 returned.

☐ 1. Document ID: US 5404301 A

L1: Entry 1 of 4

File: USPT

Apr 4, 1995

US-PAT-NO: 5404301

DOCUMENT-IDENTIFIER: US 5404301 A

TITLE: Method and apparatus of vehicle transmission control by assured minimum

pulse width

Full Title Citation Front Review Classification Date Reference **Sequences Catachinents** Claims KMC Draw. De

☐ 2. Document ID: US 4819597 A

L1: Entry 2 of 4

File: USPT

Apr 11, 1989

US-PAT-NO: 4819597

DOCUMENT-IDENTIFIER: US 4819597 A

TITLE: Clocked current torque motor control

Full Title Citation Front Review Classification Date Reference Secuences Attachments Claims KMC Draw De

☐ 3. Document ID: EP 628742 A1

L1: Entry 3 of 4

File: EPAB

Dec 14, 1994

PUB-NO: EP000628742A1

DOCUMENT-IDENTIFIER: EP 628742 A1

TITLE: Method and apparatus of vehicle transmission control by assured minimum

pulse width.

Full Title Citation Front Review Classification Date Reference Sequences Attachments Claims KWIC Draw Do

4. Document ID: CN 1053624 C, EP 628742 A1, AU 9463342 A, BR 9401772 A, CZ 9401368 A3, CA 2125133 A, US 5404301 A, ZA 9403867 A, JP 07151225 A, AU 668037 B, EP 628742 B1, DE 69400844 E, ES 2094026 T3, CN 1103839 A, RU 2123440 C1, CA 2125133 C, CZ 287765 B6, KR 300295 B

L1: Entry 4 of 4

File: DWPI

Jun 21, 2000

DERWENT-ACC-NO: 1995-015775

DERWENT-WEEK: 200468

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TITLE: Vehicle transmission control by minimum <u>pulse</u> width - supplies <u>solenoid</u> valves with fluid incrementally to operate clutch or brake actuators optimised with feedback

Full Title Citation Front Review Classification Date Reference Sequence Attachments Claims KMC Draw De Clear Generate Collection Print, Fwd Refs Bkwd Refs Generate OACS

Terms Documents

SLICKER.INV. AND SOLENOID\$ AND PULSE\$

4

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# **Hit List**

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**Search Results** - Record(s) 1 through 1 of 1 returned.

☐ 1. Document ID: <u>US 5404301 A</u>

L2: Entry 1 of 1

File: USPT

Apr 4, 1995

US-PAT-NO: 5404301

DOCUMENT-IDENTIFIER: US 5404301 A

TITLE: Method and apparatus of vehicle transmission control by assured minimum

pulse width

DATE-ISSUED: April 4, 1995

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Slicker; James M. West Bloomfield MI

ASSIGNEE-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY TYPE CODE

Eaton Corporation Cleveland OH 02

APPL-NO: 08/072486 [PALM]
DATE FILED: June 7, 1993

INT-CL-ISSUED: [06] G06F 15/50

INT-CL-CURRENT:

TYPE IPC DATE

CIPS <u>F16</u> <u>D</u> <u>48/00</u> 20060101

CIPS <u>F16</u> <u>H</u> <u>61/02</u> 20060101

CIPS <u>F16</u> <u>D</u> <u>48/06</u> 20060101

US-CL-ISSUED: 364/424.1; 364/426.03, 364/424.01, 192/3.3, 192/3.58, 477/138,

477/131, 477/161

US-CL-CURRENT: 701/60; 192/3.3, 192/3.58, 477/131, 477/138, 477/161, 701/51

FIELD-OF-CLASSIFICATION-SEARCH: 364/424.1, 364/431.1-431.12, 364/424.01, 364/426.03, 192/3.3, 192/3.58, 192/35, 192/58, 192/85, 192/103, 192/57, 192/.052, 192/.073, 74/866, 74/867, 74/868, 74/869, 74/335, 74/733.1, 73/168, 73/37, 73/40, 73/46, 180/197, 180/167, 477/62, 477/138, 477/131, 477/80, 477/132, 477/161, 477/149, 477/148, 477/163, 477/129

See application file for complete search history.

PRIOR-ART-DISCLOSED:

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#### U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3740615	June 1973	Vigini	361/159
<u>4009695</u>	March 1977	Ule	364/431.07
4021712	May 1977	Ishihara et al.	74/866
4102222	July 1978	Miller et al.	74/866
4131325	December 1978	Bayliss	303/93
4321946	March 1982	Paulos et al.	340/635
4373697	February 1983	Phelps	251/129
<u>4550953</u>	November 1985	Bartholomew	303/15
<u>4779489</u>	October 1988	Haley	74/844
4843902	July 1989	Patton et al.	74/335
5048329	September 1991	Marchini	73/168
5063813	November 1991	Lentz	74/866
5079971	January 1992	Yoshimura et al.	477/161
5115395	May 1992	Petzold	364/424.1
<u>5119683</u>	June 1992	Deutsch et al.	73/861
5197583	March 1993	Sakai et al.	192/35

ART-UNIT: 234

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ASSISTANT-EXAMINER: Louis-Jacques; Jacques H.

ATTY-AGENT-FIRM: Young, MacFarlane & Wood

#### ABSTRACT:

Pulse frequency modulation is used to control brakes and clutches which are operated by fluid pressure actuators controlled by electrically actuated solenoid valves. Short pulse periods for all duty cycles are generated by feedback from the solenoid valve or from the actuator. In one circuit an electrical control triggers a flip-flop which starts solenoid current. Solenoid movement results in back-emf and its effects on the solenoid flux field or current is detected and used as a feedback signal to reset the flip-flop to thereby turn off the current as soon as the valve is operated. In another circuit, a computer control emits a command for a certain pulse period. Actuator pressure or position is monitored to produce a feedback signal to the computer. If the signal is not received, the pulse period is increased for the next pulse command so that a sufficient pulse period will be found. If the magnitude of the actuator response exceeds a threshold, the pulse period is decreased for the next pulse command. Pulse width modulation may also be improved by the same technique for minimizing the pulse period at the lowest duty cycles and yet assuring actuation.

25 Claims, 10 Drawing figures

	Full	Title	Citation	Front	Review	Classification	Date	Reference Sequence	Altechments Claims	KWWC Drawi De
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	Terms	Documents	
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